



## **Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection**

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**Table 17h. Antiretroviral Therapy-Associated Adverse Effects and Management Recommendations—Lipodystrophy, Lipohypertrophy, Lipoatrophy (Last updated November 1, 2012; last reviewed November 1, 2012)**

Adverse Effects	Associated ARVs	Onset/Clinical Manifestations	Estimated Frequency	Risk Factors	Prevention / Monitoring	Management
Lipodystrophy (fat redistribution)—general information	See below for specific associations.	<u>Onset:</u> Trunk and limb fat initially increases within a few months of start of ART; peripheral fat wasting may not begin to appear for 12 to 24 months.	<u>Adults:</u> 2%–84%  <u>Children:</u> 1%–33%, perhaps more common in adolescents than prepubertal children	Genetic predisposition Puberty HIV-associated inflammation  <b>Older age</b> <b>Longer duration of ART</b>	See below	See below
Central lipohypertrophy	Can occur in the absence of ART, but most associated with PIs and EFV; EFV also associated with gynecomastia and breast hypertrophy	<u>Presentation:</u> Central fat accumulation with increased abdominal girth, which may include dorsocervical fat pad (buffalo hump) and/or gynecomastia in males or breast hypertrophy in females. The appearance of central lipohypertrophy is accentuated in the presence of peripheral fat wasting (lipoatrophy).	Up to 25%	Obesity before initiation of therapy  <b>Sedentary lifestyle</b>	<u>Prevention:</u> Calorically appropriate, low-fat diet and exercise.  <u>Monitoring:</u> Measure BMI.	Calorically appropriate, low-fat diet and exercise, especially strength training.  <b>Smoking cessation (if applicable) to decrease future CVD risk.</b>  Data are insufficient to allow the Panel to safely recommend use of any of the following modalities in children: recombinant human growth hormone, growth hormone-releasing hormone, metformin, thiazolidinediones, anabolic steroids, or liposuction.
Facial/peripheral lipoatrophy	Most associated with thymidine analogue NRTI (d4T > ZDV)	<u>Presentation:</u> Thinning of subcutaneous fat in face, buttocks, and extremities, measured as decrease in trunk/limb fat by DXA or triceps skinfold thickness. Preservation of lean body mass distinguishes lipoatrophy from HIV-associated wasting.	Risk low (up to 15%) in patients not treated with d4T or ZDV	d4T and ZDV Obesity before ART	<u>Prevention:</u> Avoid use of d4T and ZDV.  <u>Monitoring:</u> Patient self-report and physical exam are the most sensitive methods of monitoring lipoatrophy.	Switch from d4T or ZDV to other NRTIs if possible without loss of virologic control.  Data are insufficient to allow the Panel to safely recommend use of any of the following modalities in children: injections of poly-L-lactic acid, recombinant human leptin, autologous fat transplantation, or thiazolidinediones.

**Key to Acronyms:** ARV = antiretroviral, BMI = body mass index, ART = antiretroviral therapy, CVD = cardiovascular disease, d4T = stavudine, DXA = dual energy x-ray absorptiometry, EFV = efavirenz, NRTI = nucleoside reverse transcriptase inhibitor, PI = protease inhibitor, ZDV = zidovudine

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See the archived version of *Supplement III, February 23, 2009 Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection*, (<http://www.aidsinfo.nih.gov>) for a more complete discussion and reference list.

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